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OVIPOSITION AND EGGS OF AN AUSTRALIAN ROBBER FLY, *NEOARATUS ABLUDO* DANIELS (DIPTERA: ASILIDAE)[1]

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Abstract.—The Australian robber fly, *Neoaratus abludo* Daniels, deposited eggs within or on the glumes of shattered seed heads of wild wheat, *Avena barbata.* Oviposition occurred mostly between 1100–1200 h, at temperatures from 23.5° to 30°C (mean 27.3°C). The mean length of 157 eggs was 1.19 mm; the mean width, 0.39 mm. SEM photos of eggs reveal a finely, densely striate surface over a slightly elevated, coarsely reticulated network of sculpturing. Small, rounded to elongate oval bodies cover much of the surface but are intermixed with larger, dome-like projections which have sloping sides, striated basal and lateral areas, smooth apical surface, and rounded to slit-like openings in each. Sperm tails are present in the micropyle of some eggs.

The Australian robber fly, *Neoaratus abludo* Daniels, oviposited in shattered seed heads of wild wheat, *Avena barbata,* at a site near Aldinga, South Australia; one to nine eggs per head (mean 3.5) were deposited per seed head. Most eggs were laid singly, usually in rows, on the surface of, or within, empty glumes. Some were cemented directly to the stalk. One female, observed for a period of ca. 15 minutes, deposited 28 eggs on or within seven shattered seed heads. She visited an additional three seed heads without depositing eggs. Another female probed the flower heads of catsear, *Hypochoeris radieata,* but no eggs were recovered. Some *N. abludo* females grasped the pedicel at the base of the seed head, faced down the stem, and curled the ovipositor so that eggs were placed near the base. One female grasped a glume near the middle and took a crosswise position while ovipositing.

Daniels (1983) reported that a female *N. abludo* (at Cudal, N.S.W.) deposited one egg on a seed head of wheat at 9:00 A.M.; other plants had as many as 5 eggs, including some on the stem.

Oviposition records for other *Neoaratus* spp. are scarce. Hardy (1927) discovered a female *N. inglorius* (Macleay) placing eggs in parallel rows on a leaf of a garden shrub at Edgecliff, Sydney; larvae emerged seven days later and dropped to the ground. In the same city, eggs deposited by a female *N. hercules* (Wiedemann) in an inverted glass tumbler hatched after six days (Irwin-Smith, 1923).

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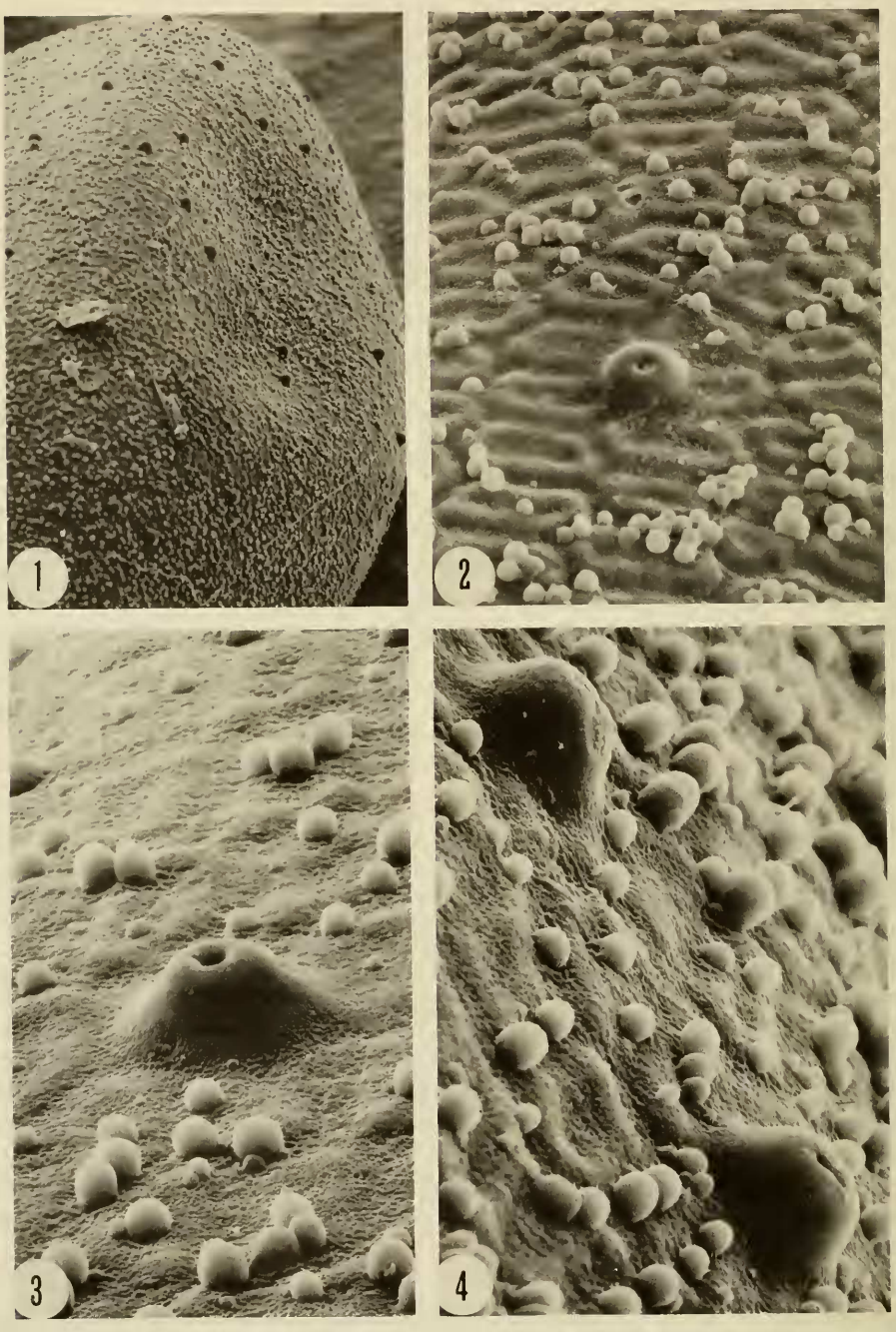
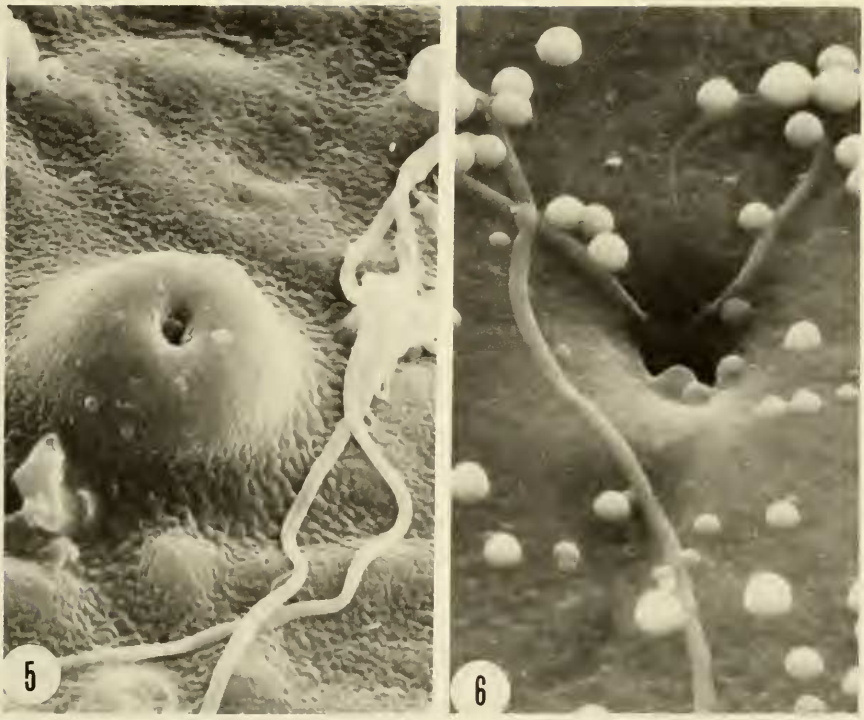


Figs. 1–4. Eggs of *Neoaratus abludo* Daniels (SEM). 1, General view, one end, ×200. 2, Surface; elevated bodies and reticulated sculpturing, ×1000. 3, Elevated bodies and striated surface, ×2000. 4, Elevated bodies and striated surface, ×2000.



Figs. 5–6. Eggs of *Neoaratus abludo* Daniels (SEM). 5, Surface: striations, elevated bodies, sperm tails, ×4000. 6, Micropyle and sperm tails, ×4000.

The light cream colored eggs, which changed to yellowish brown, and the first instar larvae were described.

Oviposition by *N. abludo* was observed between 0930 and 1310 h, with 42% occurring between 1100–1200 h. Time of oviposition varied with temperature; on days with heavy overcast or light rain, oviposition occurred at a later time. Temperatures at oviposition levels (45–76 cm) ranged from 23.5° C to 30° C (mean 27.3° C) when eggs were deposited.

Out of 157 eggs collected, 35 (22%) were placed inside glumes, 4 on the pedicel, and 118 (75%) on the ribbed outside surface of the glumes. These eggs were light brown when deposited. The lengths of the 157 eggs ranged from 0.90 mm to 1.25 mm (mean 1.19 mm); the widths, 0.38 mm to 0.40 mm (mean 0.39 mm).

Eggs for the SEM were soaked briefly in liquid detergent, washed, sonicated in water, and dehydrated. They were mounted on specimen stubs with silver paint, vacuum coated once with carbon and twice with gold, and examined in a JEOL SM35C.

The eggs of *N. abludo* had the outer surface (Fig. 1) densely set with very small, rounded projections and scattered larger bodies irregularly distributed within a coarsely reticulated sculpturing of low ridges (Fig. 2). The ultimate external surface of the egg shell (Figs. 3, 4) is minutely, finely striate.

The smaller of the surface projections (Figs. 2–4) appear solid; they are firmly

attached, round to elongate oval structures with smoothly curved apices. The scattered larger projections (Figs. 1–5) are rounded on top, have gently to steeply sloping sides, and are widened at the base. The apical area is smooth, but the sides, to a varying degree upward, have fine striations continuous with those of the flatter surfaces of the egg (Figs. 3–5). The top of each of these dome-like elevations has a single, median, rounded to slit-like opening which may lead to a hollow interior (Figs. 2–5). These medium, rounded openings are similar in appearance to those in SEM photos of *Machimus fimbratus* (Meigen) eggs (Musso, 1981) although the surface reticulation is considerably different.

Some of these eggs were evidently deposited (and collected) soon after they were fertilized (Figs. 5, 6). A micropyle opening is pictured in Fig. 6, with two sperm tails extending from the interior of the egg. Tangled sperm tails are present also on the egg in Fig. 5.

Acknowledgments

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